What is Claimed is:

1. A process for increasing cooperativity of a phase transition of an erythrocytic cell comprising:

providing an erythrocytic cell having an alcohol and a cooperative phase transition; and

removing at least a portion of the alcohol from the erythrocytic cell to increase the cooperativity of the cooperative phase transition of the erythrocytic cell.

2. The process of Claim 1 wherein said alcohol comprises a steroid alcohol.

3. The process of Claim 2 wherein said steroid alcohol comprises at least one side chain having 8 to 10 carbon atoms.

4. The process of Claim 1 wherein said alcohol comprises from 25 to 27 carbon atoms.

5. The process of Claim 1 wherein said alcohol comprises cholesterol.

6. The process of Claim 1 wherein said erythrocytic cell comprises an erythrocytic membrane including said alcohol and said cooperative phase transition.

7. The process of Claim 1 wherein said erythrocytic cell comprises an erythrocytic membrane including a portion of the alcohol and the cooperative phase transition.

8. A process for producing a phase transition temperature range in an erythrocytic cell comprising:

providing an erythrocytic cell including an alcohol and at least two phase transition temperature ranges; and

removing at least a portion of the alcohol from the erythrocytic cell to produce an erythrocytic cell having at least three phase transition temperature ranges.

9. The process of Claim 8 wherein said alcohol comprises a steroid alcohol.

10. The process of Claim 9 wherein said steroid alcohol comprises at least one side chain having 8 to 10 carbon atoms.

11. The process of Claim 8 wherein said alcohol comprises from 25 to 27 carbon atoms.

12. The process of Claim 8 wherein said alcohol comprises cholesterol.

13. The process of Claim 8 wherein said erythrocytic cell including the alcohol comprises an erythrocytic membrane including alcohol and said two phase transition temperature ranges.

14. The process of Claim 8 wherein said erythrocytic cell including the alcohol comprises an erythrocytic membrane including at least a portion of the alcohol and at least a portion of the two phase transition temperature ranges.

15. The process of Claim 8 wherein said produced erythrocytic cell comprises an erythrocytic membrane including at least a portion of the three phase transition temperature ranges after removal of at least a portion of the alcohol.

16. A process for loading an oligosaccharide into erythrocytic cells comprising:

providing erythrocytic cells having an alcohol;

removing at least a portion of the alcohol from the erythrocytic cells to produce erythrocytic cells having a phase transition temperature range selected from the group consisting of a low phase transition temperature range, an intermediate phase transition temperature range, and a high phase transition temperature range; and

disposing the erythrocytic cells in an oligosaccharide solution for loading an oligosaccharide into the erythrocytic cells.

17. The process of Claim 16 wherein said oligosaccharide solution includes a temperature in a range that approximates the range of temperatures for the phase transition temperature range.

18. The process of Claim 16 additionally comprising heating the oligosaccharide solution to increase the loading efficiency of the oligosaccharide into the erythrocytic cells.

19. The process of Claim 17 additionally comprising heating the oligosaccharide solution to increase the loading efficiency of the oligosaccharide into the erythrocytic cells.

20. The process of Claim 16 additionally comprising heating the oligosaccharide solution to a temperature in the high phase transition temperature range to increase the loading efficiency of the oligosacchride into the erythrocytic cells.

21. The process of Claim 17 additionally comprising heating the oligosaccharide solution to a temperature in the high phase transition temperature range to increase the loading efficiency of the oligosacchride into the erythrocytic cells.

22. The process of Claim 16 additionally comprising taking up external oligosaccharide via lipid phase endocytosis from the oligosaccharide solution.

23. The process of Claim 16 wherein said low phase transition temperature range is greater than about 2°C.

24. The process of Claim 16 wherein said erythrocytic cells comprise erythrocytic membranes respectively including said low phase transition temperature range, said intermediate phase transition, and said high phase transition temperature range.

25. The process of Claim 16 wherein said intermediate phase transition temperature range is greater than about 20°C.

26. The process of Claim 16 wherein said high phase transition temperature range is greater than about 30°C.

27. The process of Claim 16 wherein said erythrocytic cells do not include a fixative.

28. The process of Claim 16 wherein said intermediate phase transition temperature range ranges from a temperature greater than about 20°C to a temperature equal to or less than about 30°C.

29. The process of Claim 16 wherein said high phase transition temperature range ranges from a temperature greater than about 30°C to a temperature equal to or less than about 50°C.

30. The process of Claim 23 wherein said low phase transition temperature range ranges from a temperature greater than about 2°C to a temperature equal to or less than about 20°C.

31. The process of Claim 29 wherein said high phase transition temperature range ranges from about 30°C to about 40°C.

32. The process of Claim 26 wherein said high phase transition temperature range ranges from about 32°C to about 38°C.

33. The process of Claim 16 wherein said oligosaccharide is trehalose.

34. The process of Claim 26 wherein said oligosaccharide is trehalose.

35. An erythrocytic cell composition comprising reduced-alcohol erythrocytic cells loaded internally with an oligosaccharide from an oligosaccharide solution.

36. The erythrocytic cell composition of Claim 36 wherein said reduced-alcohol erythrocytic cells comprise oligosaccharide loaded from the oligosaccharide solution at a temperature in a range of temperatures selected from the group consisting of a low phase transition temperature range, an intermediate phase transition temperature range, and a high phase transition temperature range.

37. A process for increasing the survival of dehydrated erythrocytic cells after storage comprising:

providing erythrocytic cells from a mammalian species and having an alcohol;

removing alcohol from the erythrocytic cells;

loading the erythrocytic cells with a preservative;

dehydrating the erythrocytic cells while maintaining a residual water content in the erythrocytic cells equal to or less than about 0.30 gram of residual water per gram of dry weight erythrocytic cells to increase erythrocytic cell survival upon rehydrating after storage;

storing the dehydrated erythrocytic cells having the residual water content equal to or less than about 0.30 gram of residual water per gram of dry weight erythrocytic cells; and

rehydrating the stored dehydrated erythrocytic cells with the stored dehydrated erythrocytic cells surviving dehydration and storage.

38. The process of Claim 37 wherein said preservative comprises an oligosaccharide.

39. The process of Claim 38 wherein said removing alcohol comprises removing at least part of the alcohol.

40. The process of Claim 37 additionally comprising cooling the loaded erythrocytic cells to a temperature below their freezing point prior to dehydrating the erythrocytic cells.

41. The process of Claim 40 wherein said dehydrating the erythrocytic cells comprises lyophilizing the cooled loaded erythrocytic cells.

42. The process of Claim 40 wherein said residual water content of the erythrocytic cells ranges from about 0.00 gram of residual water per gram of dry weight erythrocytic cells to less than about 0.30 gram of residual water per gram of dry weight erythrocytic cells.

43. A process of preparing loaded erythrocytic cells comprising:

providing erythrocytic cells selected from a mammalian species and including an alcohol;

removing at least a portion of the alcohol from the erythrocytic cells to produce erythrocytic cells having at least three phase transition temperature ranges; and

loading an oligosaccharide into the erythrocytic cells at a temperature in a range of temperatures approximating one of the three phase transition temperature ranges to produce loaded erythrocytic cells.

44. The process of Claim 43 wherein said loading comprises loading with an oligosaccharide solution.

45. The process of Claim 44 wherein said loading comprises taking up external oligosaccharide via lipid phase induced endocytosis from the oligosaccharide solution.

46. The process of Claim 43 wherein said loading comprises incubating the erythrocytic cells with the oligosaccharide solution at a temperature in a range of temperatures approximating one of the three phase transition temperature ranges.

47. The process of Claim 43 wherein said loading is without a fixative.

48. The process of Claim 43 wherein said erythrocytic cells are human erythrocytic cells.

49. Loaded erythrocytic cells produced in accordance with the process of Claim 43.

50. A solution for loading erythrocytic cells comprising reduced-alcohol erythrocytic cells having three phase transition temperature ranges; and an oligosaccharide solution containing the reduced-alcohol erythrocytic cells for loading oligosaccharide from the oligosaccharide solution into the reduced-alcohol erythrocytic cells.

51. The solution of Claim 50 wherein external oligosaccharide is uptaked via lipid phase endocytosis from the oligosaccharide solution at a temperature in a range of temperatures approximating one of the three phase transition temperature ranges.

52. The solution of Claim 50 wherein said reduced-alcohol erythrocyte cells comprise oligosaccharide uptaked via lipid phase endocytosis from the oligosaccharide solution at a temperature ranging from about 30°C to less than about 50°C.

53. A generally dehydrated composition comprising:

freeze-dried reduced-alcohol erythrocytic cells effectively loaded internally with at least about 10 mM trehalose therein to preserve biological properties during freeze-drying and rehydration.

54. The generally dehydrated composition of Claim 53 wherein the amount of trehalose loaded inside the freeze-dried reduced-alcohol erythrocytic cells is from about 10 mM to about 200 mM.

55. The generally dehydrated composition of Claim 53 wherein the freeze-dried reduced-alcohol erythrocytic cells comprise less than about 0.30 gram of residual water per gram of dry weight erythrocytic cells to increase erythrocytic cell survival upon rehydrating.

56. The generally dehydrated composition of Claim 53 wherein the reduced-alcohol erythrocytic cells having been effectively loaded from effectively incubating the reduced-alcohol erythrocytic cells at a temperature in a range of temperatures selected from the group consisting of a low phase transition temperature range, an intermediate phase transition temperature range, and a high phase transition temperature range, so as to uptake external trehalose via lipid phase induced endocytosis.

57. The generally dehydrated composition of Claim 53 wherein the erythrocytic cells are selected from a mammalian species.

58. A process of preparing a dehydrated composition comprising:

providing erythrocytic cells selected from a mammalian species and including an alcohol;

loading internally the erythrocytic cells with more than about 10 mM of an oligosaccharide therein to preserve biological properties, said loading including incubating the erythrocytic cells with an oligosaccharide solution having an oligosaccharide therein and a temperature in a range of temperatures selected from the group consisting of a low phase transition temperature range, an intermediate phase transition temperature range, and a high phase transition temperature range;

cooling the loaded erythrocytic cells to below their freezing point; and

lyophilizing the cooled erythrocytic cells.

59. The process of Claim 58 wherein the lyophilizing is conducted so as to leave equal to or less than about 0.3 gram of residual water per gram of dry weight erythrocytic cells.

60. The process of Claim 58 wherein greater than about 80% of the erythrocytic cells survive dehydration and storage.

61. The process of Claim 58 additionally comprising prehydrating the erythrocytic cells, and subsequently hydrating the prehydrated erythrocytic cells.